

Florida LAKEWATCH



Dedicated to Sharing Information About Water Management and the Florida LAKEWATCH Program Volume XXIX 2004

UF/IFAS Graduate Student Studies Bacteria in Lakes

After years of working with LAKEWATCH volunteers, we've come to the conclusion that bacterial contamination is one of the biggest concerns for people who live on lakes. This is certainly understandable as waterborne diseases have ravaged human populations worldwide for centuries. Even today, problems exist in many countries. Fortunately, in United States, advances have been made in the treatment of human waste that have greatly reduced incidences of disease from contaminated water.

However, we are not totally immune from bacteria-related problems. Leaky sewer lines and septic tanks combined with rainwater runoff occasionally result in high bacteria counts in lakes and coastal waters. While our program is



Joe Richard

Bacterial contamination continues to be one of the greatest concerns for lake users.



Amy Richard

Jennifer Donze places bacteria samples into an incubator where they will "bake" for 24 hours. Afterwards, bacteria colonies are counted from each sample. For her research project, Jennifer sampled and analyzed total coliform counts and *E. coli* counts for 30 lakes in Hillsborough County.

primarily about monitoring the biological productivity of lakes (i.e., nutrients, algae, water clarity, etc.) we have been involved in a small amount of bacterial monitoring — mostly because volunteers have had a hard time gaining assistance from state agencies that are struggling from funding shortages.

Much of our sampling has been done by Jennifer Donze, a UF/IFAS fisheries student who has spent the past two years monitoring lakes in Hillsborough County as part of her graduate thesis.* For her project, Jennifer collected samples, on a regular basis, from 30 lakes and then analyzed them for total coliforms and also *Escherichia coli* (*E. coli*), an organism that is increasingly being used as an indicator of bacterial contamination. (See the sidebar on page 2 for more about the use of total coliform counts, fecal coliform counts and *E. coli* counts as bacterial indicators.)

* Donze, Jennifer. 2004. *Factors Affecting Total Coliform and Escherichia coli Bacterial Counts at 30 Lakes in Hillsborough County, Florida.*

Jennifer's research revealed some interesting results:

- Out of the 3,530 *E. coli* samples, only 1.4 percent of them exceeded the Florida Administrative Code Standards for fecal coliform. (Note: *E. coli* are part of the fecal coliform family; both originate from warm-blooded animals — including humans.)
- 24 percent of the **total coliform** counts exceeded state standards. (This bacteria group is generally related to skin rashes and ear infections.)
- Aquatic plant abundance didn't seem to affect **total coliform** or *E. coli* counts

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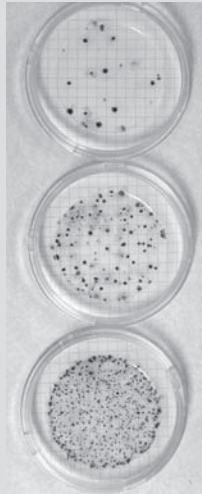
significantly, nor did road densities or the use of septic tanks and/or sewer systems.

- Total coliforms were higher during wet weather periods while *E. coli* counts showed very little correlation to wet or dry conditions.
- Lake size and shape (lake morphometry) did show a correlation to total coliform and *E. coli* counts. For example, lakes with the highest mean *E. coli* counts all happened to be small in size. (Editor's note: While it didn't happen in this study, larger lakes do have the potential for high *E. coli* counts.)
- Aquatic bird abundance had the strongest relationship to bacteria counts, especially *E. coli* counts.

While it may be difficult to draw any major conclusions from just 30 lakes (i.e., compared with 7,800 found throughout the state), it does tell us that, in Hillsborough County, bacterial contamination doesn't appear to be a major problem. It also offers new paths to follow for future study. Many thanks to Ms. Donze for taking that first step!

For more about bacteria in Florida lakes, see Information Circular 106: A Beginner's Guide to Water Management — Bacteria.

Using Indicator Organisms for Bacteria Monitoring



Total coliform samples Total coliform counts include many different species and strains of coliform bacteria, originating from a variety of sources, including both plants and animals (i.e., fecal and non-fecal).

Fecal coliform counts include bacteria that usually originate from fecal matter (i.e., animal or human waste).

Escherichia coli (*E. coli*) counts identify just one of the many types of bacteria found within the fecal coliform group. It has recently surfaced as a particularly useful indicator organism.

Detecting disease-causing agents (pathogens) in water can be challenging; some types are rarely found in large enough numbers for detection while others are nearly impossible to cultivate in a laboratory (i.e., for counting purposes).

That's why nearly all bacteria monitoring programs test for the presence of non-pathogenic bacteria that are far more numerous and easier to detect. This approach is based on the idea that if certain non-harmful indicator organisms are present in a water sample (i.e., from the waste of warm-blooded animals, including humans), then pathogenic agents may also be present. Introduced in 1892, this practice continues to be the basis for monitoring today. Total coliforms and fecal coliforms have been the main indicator groups used for water quality standards. However, in recent years *E. coli* counts have been added to the regimen.

LAKEWATCH Assists in Formation of Water Resources Council

Florida's newly created water resources council is seen by many as a good omen for water monitoring programs. The idea has been considered since early 2002 when The Ocean Conservancy assembled leaders from various water quality monitoring programs and agencies throughout the state to discuss the need for more collaboration and cooperation among groups. However, things really began to take shape this summer at a retreat meeting in Cocoa Beach.

Florida LAKEWATCH Assistant Director Mark Hoyer attended the event to help in the organization of the fledgling council and to ensure that our volunteers will continue to have a voice in future monitoring. According to Hoyer, it was very evident at the meeting that LAKEWATCH was one of the major contributors to the state's water quality database; our reputation was one of the reasons we were invited to participate in the ground breaking process to begin with.

The Council's stated mission is to

“promote and facilitate the coordination, collaboration, and communication of water monitoring programs throughout Florida.” This means that participating organizations will be trying harder to decrease overlaps in monitoring activities around the state as well as fill in the gaps for waterbodies that are in need of baseline water chemistry data. The organization will also help to create a state-wide forum where new technologies and techniques can be introduced to both researchers and citizens. By working together, it is hoped that the value of water monitoring will gain greater respect throughout the scientific community and the general public and, in turn, increase everyone's ability to leverage much-needed funding.

These goals are based on the many “challenges” that were discussed at the retreat. Funding seems to be one of the largest hurdles followed by frustrations with poor accessibility to data and weak communications between monitoring groups. Participants also voiced

concerns about the disconnect that exists between scientific findings and subsequent actions taken by communities and/or water managers. Education was another major topic of discussion, along with difficulties that are experienced when transforming data into usable knowledge for the management of Florida's unique ecosystems.

Nearly a dozen other states, including Colorado, Michigan, Maryland, Oklahoma, Texas, and Virginia have organized similar organizations as part of a National Monitoring Council. Florida will be added to the list and will help combine energies into a coordinated national effort.

Participation in this new council is open to any person, organization or agency with an interest in water monitoring in Florida.

For more information, contact:

Leesa Souto

Phone: (321) 722-2123

Email: lsouto@mail.ucf.edu

Countless Ways to Use LAKEWATCH Data

Using Lake “Trophic State” to Predict Mercury in Fish

In recent years, LAKEWATCH volunteers have heard much ado about the **trophic state classification system**, which is essentially a way of categorizing lakes based on biological productivity (i.e., a lake’s ability to support algae, aquatic plants, fish and other wildlife).

Before reading any further, see the four trophic state definitions in the sidebar.

Within lake management circles, this classification system has proven to be useful in a number of ways:

- It’s a handy short-cut for communicating about lakes. For example, if you were to use the term “oligotrophic” to describe your lake to a water management professional, he or she would immediately know that you are talking about a clear-water lake with few aquatic plants, a rock or sand bottom, and a limited amount of fish and wildlife. Although some people might debate the details (e.g., chlorophyll or nutrient concentrations, etc.), the description is close enough to provide a general picture.
- Trophic state categories can also serve as important water chemistry benchmarks. For instance, if a lake begins to shift from one trophic state to another (i.e., from a mesotrophic to a eutrophic lake), it might be an indication that the lake is changing significantly from its historical condition, in which case, further study may be warranted.

And now, yet another useful application has emerged:

Using fish mercury data and LAKEWATCH water chemistry data from 80 lakes, the Florida Department of Environmental Protection (DEP) and the Fish and Wildlife Conservation Commission (FWC) have found a correlation between lake trophic state and the presence of mercury in freshwater fish. And the relationship is a bit surprising. As it turns out, lakes with the clearest water (i.e., oligotrophic) produced fish with higher mercury levels whereas lakes with more algae and/or

LAKEWATCH determines lake trophic state largely based on chlorophyll concentrations and/or the abundance of aquatic plants found within the waterbody. Using the trophic classification system, lakes are classified into four categories:

Oligotrophic (oh-lig-oh-TROH-fic) lakes experience the lowest biological productivity. They typically have clear water, few aquatic plants, few fish, not much wildlife and a rock or sand bottom. Total chlorophyll measurements are less than 3 micrograms per liter ($\mu\text{g/L}$).

Mesotrophic (mees-oh-TROH-fic) lakes support a moderate level of biological productivity; the water will be moderately clear and contain a moderate amount of plants, fish and wildlife. Total chlorophyll measurements are between 3 and 7 $\mu\text{g/L}$.

Eutrophic (you-TROH-fic) lakes support a high level of productivity; they tend to have either lots of aquatic plants and clear water or few aquatic plants and less clear water. It also has the potential to support a lot of fish and wildlife. Total chlorophyll measurements are between 7 and 40 $\mu\text{g/L}$.

Hypereutrophic (hyper-you-TROH-fic) lakes have the highest level of biological productivity. They typically have very low water clarity and the potential for lots of fish and wildlife. They may also have an abundance of aquatic plants. Total chlorophyll measurements are greater than 40 $\mu\text{g/L}$.

aquatic plants (i.e., eutrophic lakes) had lower levels of mercury.

Using this information, Ted Lange, a Fisheries Biologist with the FWC, is currently working to develop a statistical model or formula that can be used to predict whether a lake should be considered low risk or high risk for mercury.

When you consider that Florida has more than 7,800 lakes and thousands of small ponds, the model could potentially provide a huge savings in both time and



Kirk Hill

Large bass like this 8.5-pounder, caught by Don Missett in the Tsalapopka Chain-of-lakes, are top predators. Because of their size and age, these fish tend to accumulate higher amounts of mercury than smaller fish.

money. Even under the best of funding circumstances, it is simply not feasible to collect and analyze fish and water samples from every lake in the state. This is also one of the main reasons why scientists develop mathematical models: If you can’t sample everything, one can gain a general idea of patterns or trends by sampling a percentage of lakes. (The approach is similar to the use of public opinion polls; by interviewing a cross-section of people within a community, one can at least gain a general idea of what people are thinking about an issue.)

Once the model is complete, state wildlife officials are hoping to use it as a general screening tool for advising people on the risks of eating fish from various types of lakes, based on trophic state classifications.

Editor’s Note: There will always be lakes that fall outside this type of statistical model. Even though models can’t *guarantee* predictions about mercury, they can at least provide a framework to start with.

For more details about the trophic state classification system, see our informational pamphlet on-line:
<http://lakewatch.ifas.ufl.edu/circpdf/folder/trophic2.pdf>

New and improved data sheets!

Several changes have been made to the LAKEWATCH data sheets. Here's a sneak preview:

Recording Secchi Depth Measurements

As you know, LAKEWATCH Secchi disc ropes are marked off in one-foot increments. However, water clarity doesn't always measure out into nice round numbers. That's why we ask volunteers to estimate their measurements to the nearest quarter of a foot. So now, when using the new data sheets, we ask that you write both Secchi depth and water depth measurements on the sheet (in the space provided), and then estimate and circle the appropriate fraction, if needed. As you can see from the illustration provided here, we have added fractions to the Secchi depth and Water Depth columns.

Lake Level Measurements

Some of our volunteers are also recording lake level information on their data sheets. This information is recorded at the bottom of the page. On the new data sheets, we are asking volunteers to indicate the type of gauge they are using to collect lake level data (i.e., in addition to the basic lake level measurement and rain data).

Thanks for your help and keep up the good work!

Florida LAKEWATCH Data Sheet

Lake name/County: _____ Sampler: _____
 Phone: () _____ Date: _____ Time: _____

Secchi Disc Measurements:

- For **Secchi depth** and **water depth** measurements, please indicate the number of feet and then estimate and circle the appropriate fraction, if needed.
- If your **disc is visible on the bottom**, write **B** in the **vanishing point** column below.
- If your **disc disappears in the weeds**, write **W** in the **vanishing point** column and the **depth** at which your disc disappears.
- If your **rope is too short to measure depth**, write **RS** in the **water depth** column.

Vanishing Point	Sun Code Number	Sun Code Key	Water Depth
Sta 1 _____ ft. 1/4 1/2 3/4		1 = full sun	_____ ft. 1/4 1/2 3/4
Sta 2 _____ ft. 1/4 1/2 3/4		2 = haze over sun	_____ ft. 1/4 1/2 3/4
Sta 3 _____ ft. 1/4 1/2 3/4		3 = thin cloud cover	_____ ft. 1/4 1/2 3/4
		4 = medium cloud cover	
		5 = heavy cloud cover	

Wind from? _____ Wind Strength? None / weak / medium / strong
 Wave height from crest to trough? _____ inches.

DESCRIBE the amount and duration of any of the following if they occurred within two weeks or so before your sampling date:

pollen on lake: _____ herbicides in lake: _____
 strong winds: _____ large flocks of birds: _____
 heavy boat traffic: _____ lake level changes (qualitative): _____
 rainfall: _____ anything else: _____
 Unusual weather (drought, hot spells, freeze): _____

On the back of this sheet, describe any activity in your watershed (new development, paving, land clearing, fires, new stormwater drains, etc.).

Lake Level Measurements:
 Please circle or describe the type of gauge located in the lake and then record the lake level.
 Type of Staff Gauge: WMD / City / LCWA / USGS / Other (Please describe): _____
 Lake level: _____ Rain (in) since last report: _____

* If you wish to record lake levels of your lake, please fill in these last two blanks.
 Call LAKEWATCH (1-800-LAKEWAT) if you have any questions on how to get started.



Start Planning Now! \$20,000 'Love Your Lake' Cost Share Grants Available this Spring

The Florida Lake Management Society (FLMS), with support from the Free Family Foundation, has created a cost-share program to fund shoreline restoration projects throughout the state. Each year, FLMS solicits applications from citizens, schools, and/or community groups to help

create shoreline areas within Florida lakes that will help illustrate successful shoreline management techniques. Projects should be designed to benefit lakes as well as serve as an educational tool for other lakefront homeowners. Applications are reviewed by a selection committee and winners are announced at the annual FLMS conference in June.

FLMS provides matching funds for expenses incurred. Expenditures can be in the form of labor or monetary contributions (community involvement strategies are highly recommended).

Improve your shoreline and win an award!

The Florida Lake Management Society (FLMS) is sponsoring another annual shoreline development award this Spring (2005). The program is open to all lakefront residents in Florida and is designed to encourage lakefront homeowners to combine beneficial native aquatic plant habitat with simple stormwater treatment

techniques (e.g., berms or swales). Winners receive a \$200 award and bragging rights, in the form of an engraved wooden sign that can be posted near the shoreline.

For more information, call the FLMS Shoreline Sub-committee and they can help you decide which plants are most beneficial and what permits are needed for your project.

For details about either of these opportunities, go to the FLMS Web site:

http://flms.net/shoreline_award.html

Or contact:

Chuck Hanlon
South Florida WMD
3301 Gun Club Road
West Palm Beach, FL 33406
(561) 682-6748

Deadline: April 1, 2005

Bulletin Board

Check it out! Web Site Dedicated to Florida's Bird Life

The Florida Breeding Bird Atlas, a collaborative study of Florida's bird life, is available to the public on the Florida Fish and Wildlife Conservation Commission (FWC) Web site: www.wildflorida.org/bba.

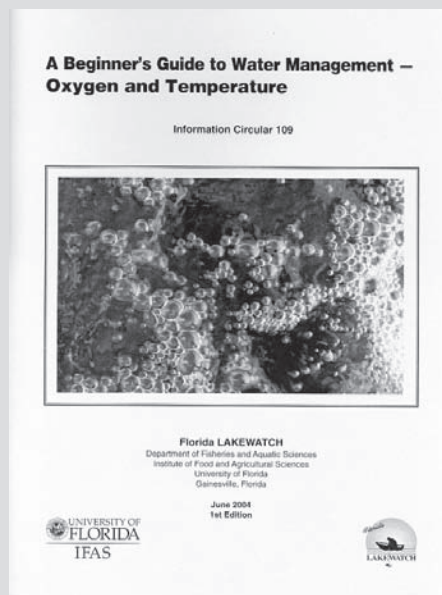
The Atlas documents breeding distributions of all bird species found in Florida between 1986 and 1991, including 196 confirmed breeders and another 19 bird species that have been cited as probable or possible breeders.

The Web site features a discussion of methods/results as well as distribution maps for 215 bird species. However, the most popular webpage must certainly be the species accounts link (<http://wld.fwc.state.fl.us/bba/species.htm>).

This section provides an entire listing of bird species available in the Atlas: Just click on your favorite feathered friend and download a concise description of its life history and habitat in Florida. Also, nearly every bird description is accompanied by Diane Pierce's lovely line drawings — a visual treat!



Many thanks to Don Missett for sending this beautiful sunset shot from the Tsala Apopka Chain-of-Lakes in Citrus County.



New Circular

A Beginner's Guide to Water Management — Oxygen and Temperature (Circular 109)

In the aquatic environment, oxygen and temperature are so closely linked that it's nearly impossible to discuss one without the other. That's why we've presented the information together under one cover:

- Part 1 describes how oxygen enters water and how it is measured;
- Part 2 delves into the physical properties of water (e.g., forms of water, density of water, etc.) and the influence that temperature has on these characteristics;
- Part 3 ties it all together with information on how oxygen and temperature affect plants and animals within freshwater habitats;
- Part 4 provides technical information about methods used to obtain oxygen and temperature measurements in water. 28 pp.

Note: While many of the concepts described in this publication are similar in saltwater environments, this circular is limited to discussion about freshwater systems.

All active volunteers will soon be receiving this circular along with their annual data packet. Additional copies can also be downloaded for free from our Web site (<http://lakewatch.ifas.ufl.edu/LWcirc.html>) or you can call for a hard copy (1-800-LAKEWATCH).

LAKEWATCH Information Circulars

All nine of the publications listed below are part of our **Beginner's Guide to Water Management** series. They were written and published for the purpose of familiarizing citizens with the language and techniques used by those involved in Florida's water management. Do you have the complete collection?

- ABCs (Circular 101)
- Nutrients (Circular 102)
- Water Clarity (Circular 103)
- Lake Morphology (Circular 104)
- Symbols, Abbreviations and Conversion Factors and (Circular 105)
- Bacteria (Circular 106)
- Fish Kills (Circular 107)
- Color (Circular 108)
- Oxygen & Temperature (Circular 109)

They can all be downloaded free from the LAKEWATCH Web site:

<http://lakewatch.ifas.ufl.edu/>

or from the UF/IFAS EDIS Web site:

<http://EDIS.ifas.ufl.edu>

Quantities of hard copies can also be ordered. Contact: Melanie Mercer at UF/IFAS Communication Services. Phone: (352) 392-2411

New Collection Center

Citrus County

Fancy's Pets

NE 3rd Avenue

(1 block South of 495)

Crystal River, FL

The freezer is located outside of the building in the back.

Contact: Julie Terrell

1-800-525-3928 or (352) 392-4817

Featured Fish:

Grass carp (*Ctenopharyngodon idella*)

COMMON NAME — Grass carp, Chinese grass carp, white amur

When we think of a minnow, we usually think of a small fish, maybe an inch or two in length. This may explain why people are so surprised when they learn that the grass carp is one of the largest members of the minnow family. In Florida, the largest recorded grass carp (so far) weighed nearly 75 pounds and was 56 inches long. That's one big minnow!

On rare occasions, anglers have had the unique experience of catching one of these fish on hook and line. Live earth worms, bologna, dough balls, or corn were usually involved. While they are essentially herbivorous fish (i.e., plant eating), they do indulge in an occasional aquatic insect or invertebrate.

A hardy fish, grass carp can withstand water temperatures that range from freezing to 100 degrees Fahrenheit (i.e., if given time to acclimate). They're not particularly picky about water quality, either; they can be found in brackish water and even in low oxygen situations, with dissolved oxygen concentrations as low as 0.5 parts per million (ppm).



Grass carp (*Ctenopharyngodon idella*)

Basic Description

Grass carp are mostly silver in color, sometimes appearing greenish or gray along the top. At times, they may even appear to be light gold or pale yellow in color. Their fins are usually a light green or gray color and their belly is white. Unusually large fish scales are another distinguishing characteristic.

Aquatic Plant Eating Machines

In the 1970s, grass carp were introduced to a number of lakes and ponds in Florida as part of an experimental effort to control nuisance aquatic plants, especially hydrilla. (Hydrilla is a submersed aquatic plant that was accidentally introduced to Florida lakes in the 1960s and has been causing problems ever since; it grows extremely fast and once established in a lake, can grow into thick masses of vegetation that completely impede boating traffic and make swimming both impossible and dangerous.)

Soon after the carp were introduced it became evident that, when stocked in large enough numbers, these fish can be quite efficient at controlling aquatic plants. In some instances they were capable of eating every single plant in a lake, including dead plant material along the bottom and the grass along the shoreline.

Since then, efforts have been made to develop a formula that can be used to predict the number of grass carp that should be stocked in a lake for aquatic plant control. The goal was to stock just enough fish so that plant consumption slightly exceeds plant growth. However, it has met with mixed results. In fact, when using LAKE-WATCH data, one study shows that there is a break point for the use of grass carp in aquatic plant control: If stocked in high numbers (i.e., greater than 25-30 fish per hectare of aquatic vegetation), they are very efficient at eating virtually all of the submersed aquatic plants in a lake.* In some instances, they did leave a few plant species that were less palatable (e.g., water lilies, bacopa and water

hyacinths). However, if stocked in lower numbers (i.e., less than 25-30 carp per hectare of vegetation), the growth rate of the plants is often greater than the consumption rates of the fish. In other words, very little plant control is achieved.

This "all or nothing" situation isn't always a bad thing, according to Florida LAKEWATCH Assistant Director Mark Hoyer. "If the goal is to completely control the growth of nuisance plants in a lake, grass carp provide an economical, long-

term solution, without the use of herbicides — which many people are wary of. Also, grass carp are particularly useful in small urban lakes, where submersed vegetation is not as imperative for fish habitat."

"However, before stocking fish, citizens need to be aware that there is a risk of eliminating nearly all the plants in the lake, which can lead to reduced water clarity."

Editor's note: Once aquatic plants are removed from a lake, open water algae (phytoplankton) are no longer competing for nutrients and as a result, algae become the dominant "plant." Aquatic plants also serve as stabilizers for bottom sediments and once removed, the potential is increased for sediments to become re-suspended, further decreasing clarity.

Triploid Grass Carp

In 1984, fisheries biologists developed a way to sterilize grass carp, to eliminate any possibility of them reproducing in lakes. (They are only able to spawn in free-flowing river systems, but the sterilization process provides an extra guarantee.) So instead of having two sets of chromosomes, triploid grass carp have three, making them functionally sterile.

In the state of Florida, only hatchery-raised triploid grass carp may be used for this type of aquatic plant control in lakes and ponds. Also, before any decisions are made about using these fish, a permit application must be filled out and a review process is required, involving a fisheries and/or aquatic plant biologist from your area. This applies to all lakes and/or ponds, including those located on private property.

For more about permitting requirements in your county, check out the FWC grass carp Web site or contact their office:

<http://www.floridaconservation.org/fishing/permits/nc-ne.html>

FWC Eustis Fisheries Research Lab

601 W. Woodward Avenue

Eustis, FL 32726

Phone: (352) 742-6438

Contact: Sharon Anthony

* Sandra G. Hanlon, et. al. 2000. *Journal of Aquatic Plant Management. Evaluation of macrophyte control in 38 Florida lakes using triploid grass carp.* 38: 48-54.

Featured Bird: Belted Kingfisher (*Megasceryle alcyon*)

By Bill Pranty / FWC

With its unique rattling call, large crested head, and habit of perching conspicuously on a tree limb or power line, the Belted Kingfisher is familiar to many Floridians, even those with only a casual interest in birds.

Considered to be year-round residents of Florida, Belted Kingfishers are more common in the Panhandle and northern sections of the state during the summer, and central and south Florida in winter.

As their name suggests, Belted Kingfishers feed largely on fish, but they also eat insects, crayfish, frogs, young birds, small rodents, and berries.

When breeding, they typically select clay or sand banks. In Florida, this limits their breeding range to areas of the state containing river bluffs or disturbed areas, such as canal banks, borrow ponds, and mine sites. In this hemisphere, they breed as far north as Alaska and winter south to northern South America.

Both adults dig the burrow, using their bills and feet. The nesting chamber is built at the end of the burrow and is usually one or two meters long (3 to 6 ft), but can be up to five meters in length (15 ft). Soon after, four or five unmarked white eggs are laid in their protected chamber, mostly from May through July. Both adults share in incubation duties, which take 23 to 24 days. Their young are fed regurgitant produced by the parents and fledge at about 23 days of age. One brood is raised per year.

These birds often forage in areas that are far from their nesting sites so the mere presence of a Kingfisher in the summer months does not necessarily mean they are breeding locally. (When using the Florida Breeding Bird Atlas Map, breeding data entries labeled as “possible” and “probable” should be interpreted with caution as they may not necessarily reflect breeding birds.)

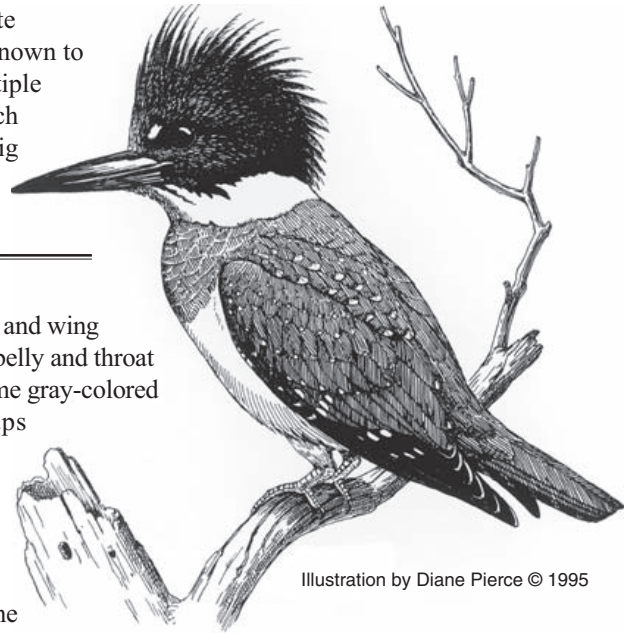
Editor's Note:

Belted Kingfishers are particularly fun to watch when feeding. Hovering like huge hummingbirds, their distinct rattling shriek is often a sign that they are “on point” above a school of minnows and are about to

strike. Experienced anglers are quite familiar with this routine and are known to watch for Kingfishers making multiple forays into a school of baitfish. Such behavior usually means there are big hungry bass “schooling up” the fish from below!

Basic Description

The Belted Kingfisher’s head, back, and wing feathers are blue-gray in color. The belly and throat are white, contrasted with a handsome gray-colored horizontal breast-band that wraps around the front of the bird, which may be how it acquired its name: While hovering in flight, male Kingfishers appear to be wearing a belt just below the neck. Females appear to be wearing two belts — one gray and one rust-colored.



Attention: Photography Buffs Request for Bird Photos

Thanks to the birding enthusiasts in our program, LAKEWATCH has collected nearly 1,000 bird surveys from 87 lakes in the past few years. At this pace, it won't be long before the data begins to reach a critical mass and provide insights into the effects that shoreline habitat, water chemistry, and climate may be having on Florida's aquatic bird populations. A considerable number of bird species are known to utilize lakes, but few studies exist that have directly quantified their numbers or examined long-term trends in diversity and abundance. (While there is an abundance of bird counts, few have targeted lakes.) With your help, we can change that.

For those who are actively monitoring birds on their lake, we want to say thank you and for those who are interested in participating, we ask that you give us a call! Also, we'd like to encourage folks to take a camera along, if possible; in a year or two, we are hoping to publish a long-term summary of aquatic bird life on Florida lakes. It will be similar to the two books published some years ago on aquatic plants and fish. However, this time, we'd like to invite our volunteers and general readership to submit their own photos for inclusion in the report. So, while motoring or paddling around your lake this fall, be sure to take along a camera and send us your best shots!



Florida LAKEWATCH
Bird Photo Contest
7922 NW 71st Street
Gainesville, FL 32653-3071

Youth Education

FLW Volunteer Shares Water Wisdom

LAKEWATCH would like to recognize the work of one of its volunteers who, in addition to being a dedicated water sampler on Trout Lake, has also decided to share his naturalist knowledge with the next generation. For at least ten years, Walt Gunkel has served as a weekly volunteer instructor at the Trout Lake Nature Center in Eustis, Florida. Now that the Center has a pool of over 50 docents, Walt fills in as an occasional substitute instructor and also helps with things like building improvements.

"It's been a fun experience," says Walt. "We let the kids use dipnets off the dock to catch aquatic insects and then talk about the organisms they've caught and the ecology. It gets pretty exciting at times — especially when they catch a water scorpion. In addition, we talk about other water-related subjects: We tell them about

LAKEWATCH and show them how to use a Secchi disc, etc.; we discuss the effects that the sun has on aquatic plant growth — things like that. Most importantly, we talk about the fact that water is necessary for all life...It's encouraging to see how sharp these kids are. In recent years, they seem to be much more aware about water conservation. Many of them now talk about how important it is to turn the water off while brushing their teeth and other conservation practices. That's been especially rewarding."

Nestled among the trees and Florida scrub with a dock that stretches out over the water, you might say that the Trout Lake Nature Center is the ultimate teaching tool, providing a perfect habitat for teaching youth about all aspects of nature, including aquatic sciences. The Center is open October 1 through April 30 and provides

educational workshops for school groups or others that want to learn about Florida's wild habitats. It's also available as a meeting place for local organizations.



Walt Gunkel prepares to give an ecology lesson.

For more information:
Lavon Silvernell
520 E CR 44
Eustis, FL 32726
Phone: (352) 357-7536

Fishing For Success !

It's been a busy summer out at the UF/IFAS Community Fishing Ponds where over 1,500 youth came out to the Dept. of Fisheries and Aquatic Sciences for aquatic youth education activities. Using fishing as the hook, kids were given an opportunity to catch a variety of aquatic organisms using nets and fishing rods. Summer camps, church groups and day care programs comprised the bulk of the visitors from June through August.

Fishing For Success (FFS) Group Coordinator Sharon Fitz-Coy says that, while it was a long hot summer, it was rewarding work. "The kids have a great time and they constantly provide us with a good laugh — from their reactions when they catch various critters or from the funny things they say."

Now that school is back in session, the program is shifting gears and getting ready for the return of many school groups. Students of all ages are welcome. (FFS also hosts fishing activities for adults.) Last spring, more than 1,700 youth visited and enjoyed a unique hands-on



A mother and her two daughters enjoy catching a myriad of aquatic organisms from the UF/IFAS Community Ponds.

educational experience; many more students are expected this fall.

Family Fishing Days

There are three more Family Fishing Days scheduled this year. These events provide families a rare opportunity to fish together in a safe and relaxed atmosphere, one Saturday per month. There are casting contests for kids, educational displays, and a free picnic lunch and prize raffle. Poles and tackle are provided for those that need it and volunteers are on hand to assist. To find out more about FFS, contact:

Sharon Fitz-Coy (352) 392-9617 x 250
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Florida LAKEWATCH

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